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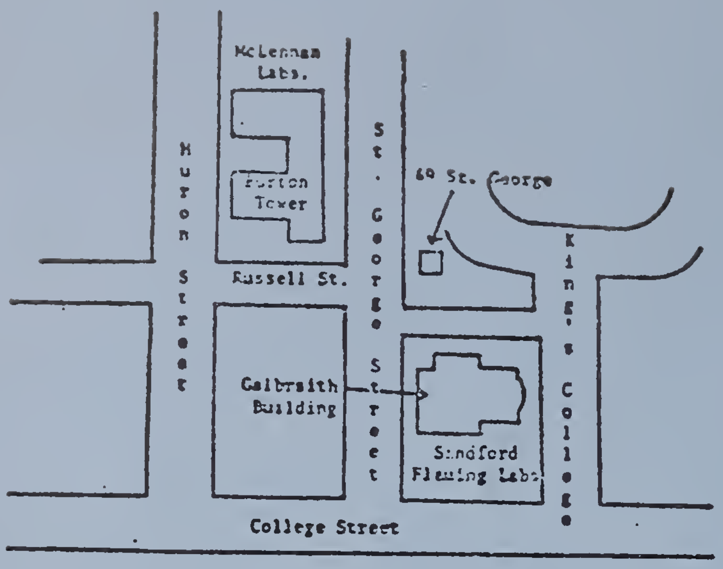
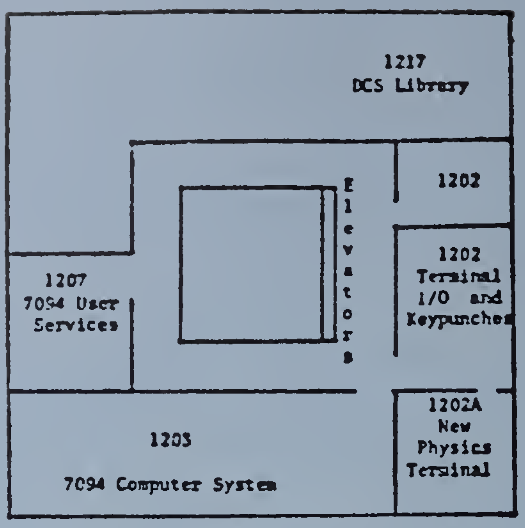
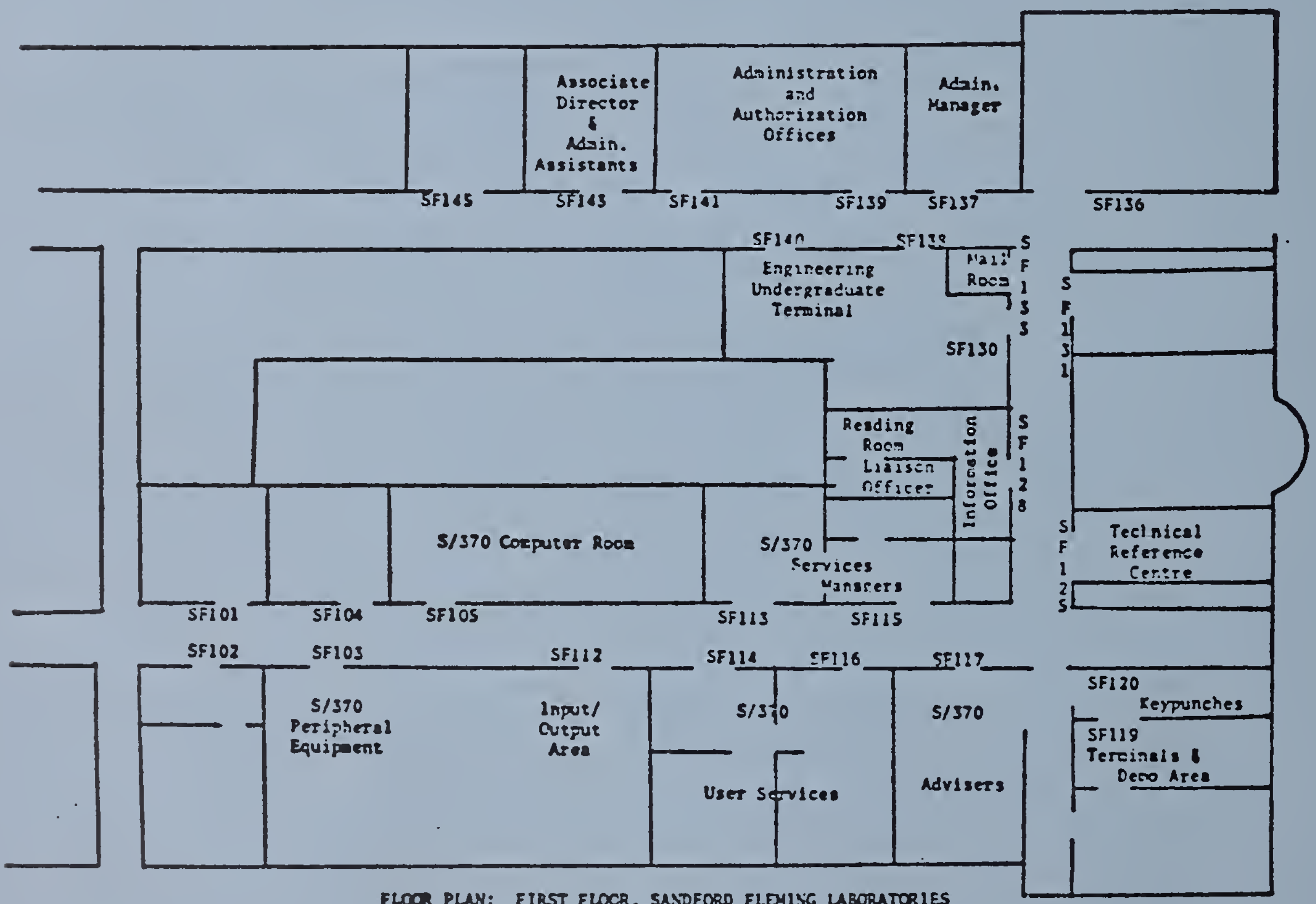
COMPUTERNEWS



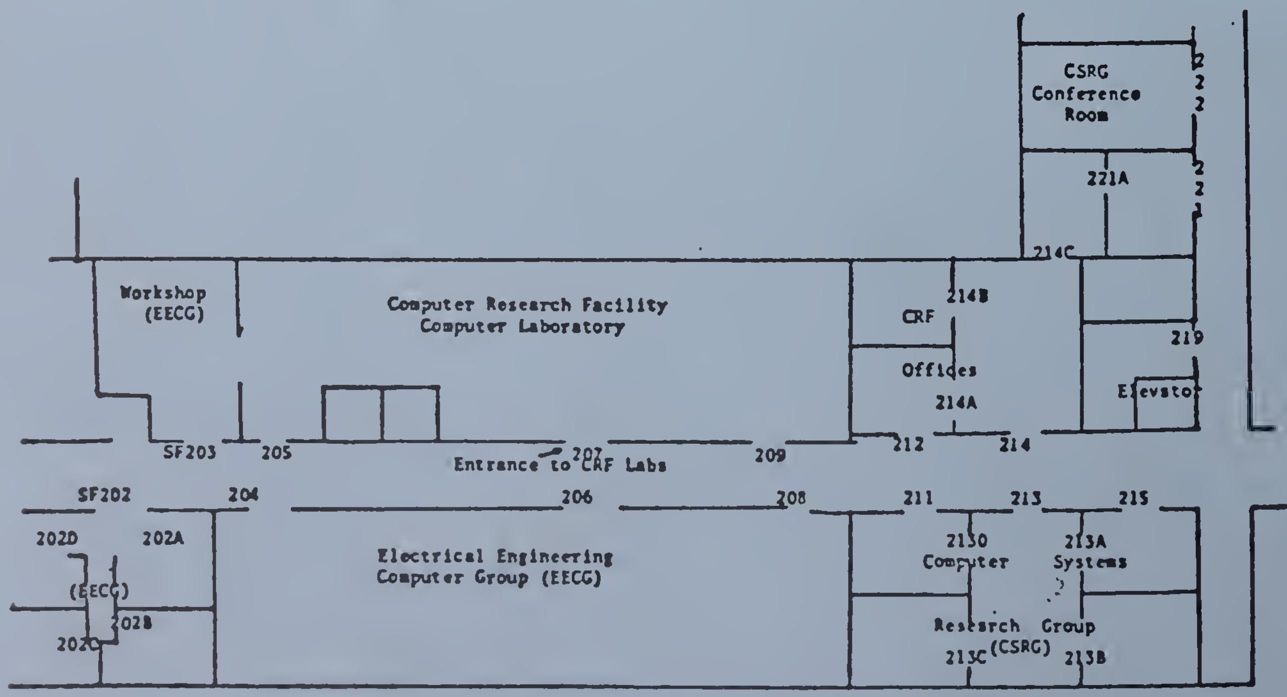


FLOOR PLAN: TWELFTH FLOOR, BURTON TOWER

UNIVERSITY OF TORONTO COMPUTER CENTRE



FLOOR PLAN: FIRST FLOOR, SANDFORD FLEMING LABORATORIES



FLOOR PLAN: SECOND FLOOR, SANDFORD FLEMING LABORATORIES

ACM CONFERENCE

The Second Annual Conference on User Services in College and University Computing Centres will be held September 22 through September 25 in the Holiday Inn, downtown Toronto. The conference is sponsored by ACM-SIGUCC, Association for Computing Machinery, Special Interest Group on University Computing Centres. The conference hosts are the University of Toronto Computer Centre, the University of Waterloo Computing Centre, Ryerson Polytechnical Institute Computing Centre, and York University Computing Centre.

Briefly, the function of the User Services groups is to increase the computer user's awareness of and ability to use the services and facilities of the computing centre, and this is what the conference is all about. Although the conference agenda includes topics primarily of interest to User Services' personnel, other interested individuals are invited to attend.

The conference sessions will cover the following topics:

-- Help the Users Help Themselves
-- Services for Non-Programming Users
-- Services for Remote Users
-- Computer Generated User Profiles
-- Services for Time-Sharing Users
-- Charging for User Services
-- User Services' Interface with the User Community
-- User Services' Interface in Computer Centre Planning/Policies/Procedures
-- Computer Aided Learning
-- New Operating Systems
-- Vendor Assistance for User Services
-- Directors' Objectives for User Services

The advance registration fee is $45 if you are already, or wish to become a member of ACM and/or SIGUCC, and $60 for non-members. For copies of the agenda, hotel accommodation details and registration forms, contact Stan Yagi at 928-7331, Sandford Fleming Building, Room 115, University of Toronto Computer Centre, Toronto M5S 1A1.

Stan Yagi

CHESS ANYONE?

The First Canadian Computer Chess Championships were held at the University of Waterloo, June 21 through June 23. The University of Toronto submitted a program which was written by Mike Valenti as a Master's thesis in Electrical Engineering with advice on chess strategy provided by Dr. Zvonko G. Vranesic of the Department of Electrical Engineering's Computer Group.

The program was entered under the name CHUTE I (Chess University of Toronto Engineering) and was run on the UTCC S/370-165 as a foreground job under TSO. CHUTE I is written in BPL, a superset of XPL which is a high level programming language similar to PL/I and is designed to be easily understood and/or modified.

This tournament was the first public appearance for CHUTE I and after losing its first game to TINKERBELLE, the program entered by

cont'd...

CHESS ANYONE? Cont'd...

Bell Labs, New Jersey, the big guns of the tournament showed little respect for CHUTE I. CHUTE I placed third overall and second Canadian, but it did have the distinction of drawing the first and second place programs. A total of five programs competed and the tournament winner was RIBBIT, University of Waterloo's program, with Dartmouth College's DART 4.0 placing second. CHUTE I was able to confuse the two top programs during the first ten moves of each game by utilizing some unusual book moves provided by Dr. Vranesic. CHUTE I maintained these advantages to the end of both games but was unable to defeat the programs and went for a draw through repetition of moves. A copy of the moves in the CHUTE I versus RIBBIT game played on June 22 follows this article. The board co-ordinates are A to H from left to right, and 1 to 8 from bottom to top. White has the bottom of the board. The notation for the moves is from/to e.g. C7C5 represents a piece moved from position C7 to position C5 on the board. An asterisk (*) denotes a capture, a plus sign (+) indicates a check and 0-0 denotes a king side castle.

CHUTE I has been submitted for entry in the ACM (Association For Computing Machines) Fourth United States Computer Chess Championships scheduled for November in San Diego. If the program is accepted a few weaknesses will be corrected and perhaps a few more sneaky book moves inserted with the hopes that it will shake up another tournament!

Anyone interested in more detailed information concerning CHUTE I is invited to contact Dr. Z.G. Vranesic in Sandford Fleming 202B, phone 928-5032 or Mike Valenti in Sandford Fleming 326B, Phone 928-8699.

Mike Valenti

	CHUTE1	RIBBIT	CHUTE'S ElAPSED TIME PER MOVE (SECONDS)
1	E2E4	C7C5	1
2	C2C4	E7E6	1
3	B2B3	F8E7	133
4	C1B2	G8F6	102
5	E4E5	F6E4	135
6	D2D3	E4*F2	111
7	E1*F2	B8C6	70
8	B1D2	B7B6	114
9	G1F3	C8A6	133
10	D3D4	C5*D4	183
11	B2*D4	D8C7	201
12	D2E4	A8C8	237
13	D4C3	0-0	259
14	E4D6	C8A8	248
15	A1C1	F7F5	287
16	A2A3	F5F4	382
17	C3B4	C6*B4	198
18	A3*B4	G7G6	241
19	C4C5	A6*F1	121
20	F2*F1	G8G7	247
21	D1C2	C7B8	166
22	F1E2	H7H5	188
23	H1D1	A7A6	142
24	C2D3	B8A7	270
25	D6E4	F8D8	237
26	D3D2	B6*C5	107
27	B4*C5	A7B7	62
28	D2D3	A6A5	87
29	F3D2	A8B8	102
30	D1F1	D8F8	126
31	D3D4	B7B5+	123
32	C1C4	B5C6	101
33	D4C3	C6A6	227
34	C3D3	B8B7	157
35	D3D4	A6C6	235
36	B3B4	A5*B4	237
37	C4*B4	B7A7	214
38	F1B1	F8A8	32
39	B4B6	C6A4	30
40	D4*A4	A7*A4	22
41	B6B4	G7F7	31
42	E4D6+	F7G8	34
43	E2F3	G6G5	33
44	B4B8+	G8G7	13
45	D6E8+	G7F7	16
46	E8D6+	F7G7	11
47	D6E8+	G7F7	16
48	E8D6+	F7G7	11
49	D6E8+		16

CHUTE I VS. RIBBIT PLAYED ON
22 JUNE 1974
ROUND II FIRST CANADIAN COMPUTER
CHESS CHAMPIONSHIPS

DRAWN THROUGH REPETITION

VS2 RELEASE 2/DAT APPROVAL

At a meeting of the Computer Centre Policy Committee held on Wednesday, July 3, 1974, staff from the University of Toronto Computer Centre presented the results of in excess of two hundred hours of testing of the IBM VS2 Release 2 Operating System. Details of the testing are contained in the article UTCC REVIEW OF THE IBM VS2 OPERATING SYSTEM appearing elsewhere in this issue of COMPUTERNEWS.

After reviewing the advantages of VS2 Release 2, the Policy Committee approved the Computer Centre's plan to install the necessary hardware modifications to the S/370-165 in August, 1974. The installation of VS2 Release 2 in late December, 1974 was also approved.

Dave McNaughton

ATTENTION ADDRESS LABEL USERS

Most of you are probably aware of the Postal Code system being implemented by the Canadian Post Office in order to facilitate mail sorting. The following is extracted from a letter sent to many companies in the Toronto area:

"In order to ensure that mail originating from your place of business receives the best possible service, it is imperative that steps be taken immediately to have your address lists of all types coded.

Implementation of mechanized, coded sortation (sic) of all types and classes of mail begins in the greater Toronto area in October of this year. The Scarborough Mail Processing Plant will be operating on a mechanized, coded basis in October, 1974 followed by the introduction of two additional larger mechanized, coded plants in the greater Toronto area in the spring of 1975.

Mail which is coded and can therefore be processed by mechanical equipment will not meet the delays which will be inherent with non-coded, non-machineable mail!

We are prepared to code any and all mailing lists which your organization has--FREE OF CHARGE--whether the lists be computerized or manual lists."

Those interested in this service should contact:

Canada Post Office
Central Ontario Postal District
Marketing Coding Co-ordinator
Room 260
21 Front Street West
Toronto, Ontario
M5J 1A5

Ian Darwin

RECENT ACQUISITIONS IN THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Anderberg, Michael R.
Cluster analysis for applications
New York, Academic Press, 1973

Campbell-Kelly, M.
An introduction to macros
London, Macdonald, 1973

Canada. Dept. of Communications
Privacy and computers

Griswold, Ralph E., and Griswold M.T.
A SNOBOL4 primer
Englewood Cliffs, N.J., Prentice-Hall, 1973

London, Keith R.
Techniques for direct access: hardware systems programming. 1st ed.
Philiadelphia, Auerbach, 1973

Managing the impact of generalized data bases.
Montvale, N.J., AFIPS, 1973

Martin, James
Security, accuracy, and privacy in computer systems
Englewood Cliffs, N.J., Prentice-Hall, 1973

Nievergelt, Jurg, Ferrar, J.C. and Reingold, E.M.
Computer approaches to mathematical problems
Englewood Cliffs, N.J., Prentice-Hall, 1974

Pollack, Solomon L., Hicks, H.T. Jr. and Harrison, W.J.
Decision tables: theory and practice
New York, Wiley-Interscience, 1971

Randell, Brian, ed.
The origins of digital computers: selected papers
Berlin, Springer-Verlag, 1973

Sterbenz, Pat H.
Floating-point computation
Englewood Cliffs, N.J., Prentice-Hall 1974

Symposium on Complexity of Sequential and Parallel Numerical Algorithms
Carnegie-Mellon University, 1973
Complexity of sequential and parallel numerical algorithms, ed by J.F. Traub
New York, Academic Press, 1973

Wooldridge, Susan
Software selection. 1st ed.
New York, Petrocelli Books, 1973

PERSONNEL CHANGES

Newcomers to the Centre this month are Ran Lee Talbott, Kiran Patel, Henri Schueler and Suzanne McCaffrey. Ran Lee is a programmer and Kiran is a computer operator, both with Interactive Systems. The Administrative section welcomes Henri as a new programmer with their group and Suzanne joins us as Dr. Wilson's new secretary. We hope you enjoy working here.

In search of new horizons are Ray Small, John Wettlaufer and Malcolm Hindley-Smith. We wish you good luck in your new ventures.

Trudy Holland

UTCC REVIEW OF THE IBM VS2 OPERATING SYSTEM

Introduction

UTCC has been reviewing the IBM VS2 Release 2 Operating System since January, 1974 and in particular has been running the controlled release VS2 Release 2 on a two megabyte 158 at IBM and a two megabyte 168 at Manufacturer's Life since April, 1974.

The objective has been to determine whether or not VS2 should be installed on the Model 165 at UTCC. The four major areas of concern are discussed below.

Function

All of the approximately 500 jobs selected to test the different language processors, applications packages and utilities used at UTCC have been run successfully with no changes under VS2, with the exception of some thirteen jobs run on the PLUTO and WATBOL compilers. The authors of PLUTO and WATBOL are making the necessary changes to their compilers so that those jobs will run.

On request, jobs submitted by UTCC users have also been run successfully. UTCC will continue to do this for users.

Many of the new features of VS2 have been observed; jobs requiring 2000K bytes have been run, read-in time JCL syntax error detection has functioned successfully, etc.

Reliability

Two operating system crashes have been experienced in the approximately 220 hours VS2 has been run to date. In both cases the system continued to run although an IPL was required to restore the operator console functions.

Several minor problems were experienced by UTCC during the testing of VS2. Most of the problems were fixed or satisfactorily bypassed by local IBM staff. The remainder of the problems as well as problems reported by other test sites were solved in the official release of VS2 early in July.

Performance

Performance tests were concentrated on a two megabyte Model 158 under both VS2 and MVT. The benchmark test job stream was composed of 450 jobs which represented the batch load on the Model 165. The stream was constructed so that the CPU and I/O distributions of the stream were the same as those of the 165 job mix.

The CPU time required to process the test stream was 6.3% more for VS2 as compared to MVT. However, because of the VS2 resource balancing algorithms and removal of MVT bottlenecks from VS2, the elapsed time required to process the test stream was slightly less (0.3%).

When comparing the performance of VS2 on the Model 165II to MVT on the Model 165, the 6.3% increase in

cont'd...

VS2 OPERATING SYSTEM Cont'd...

processing time observed under VS2 is more than offset by the percentage CPU gained by the following factors. A Model 165II CPU is 3% to 10% faster than a Model 165 depending on the job mix due to increased parallelism in the instruction fetch unit. MVT heavily loaded, with our current job mix can use on the average only up to 85% of a model 165 CPU. VS2 can use more than 95% of the CPU because of resource balancing algorithms and removal of system bottlenecks. Thus, these two factors can be expected to contribute a 13% to 20% increase in available CPU, resulting in a net performance gain for VS2 on the Model 165II.

It must be emphasized that tuning such as fixing modules in mainstorage, packing modules to reduce system paging, reducing the frequency of invocation of system resource managers and optimizing system code has not yet been done to VS2. Our MVT system is highly tuned.

Therefore, we confidently conclude that VS2 on a 165II will provide throughput and turnaround which is equal to, or better than MVT.

Accounting

One of the possible alternatives for accounting the job resource usage under VS2 is to retain, at least initially, the current MVT charging algorithms. In order to investigate the feasibility of this alternative, a stream of 25 jobs was constructed to measure the differences in CPU and I/O wait time between MVT and VS2.

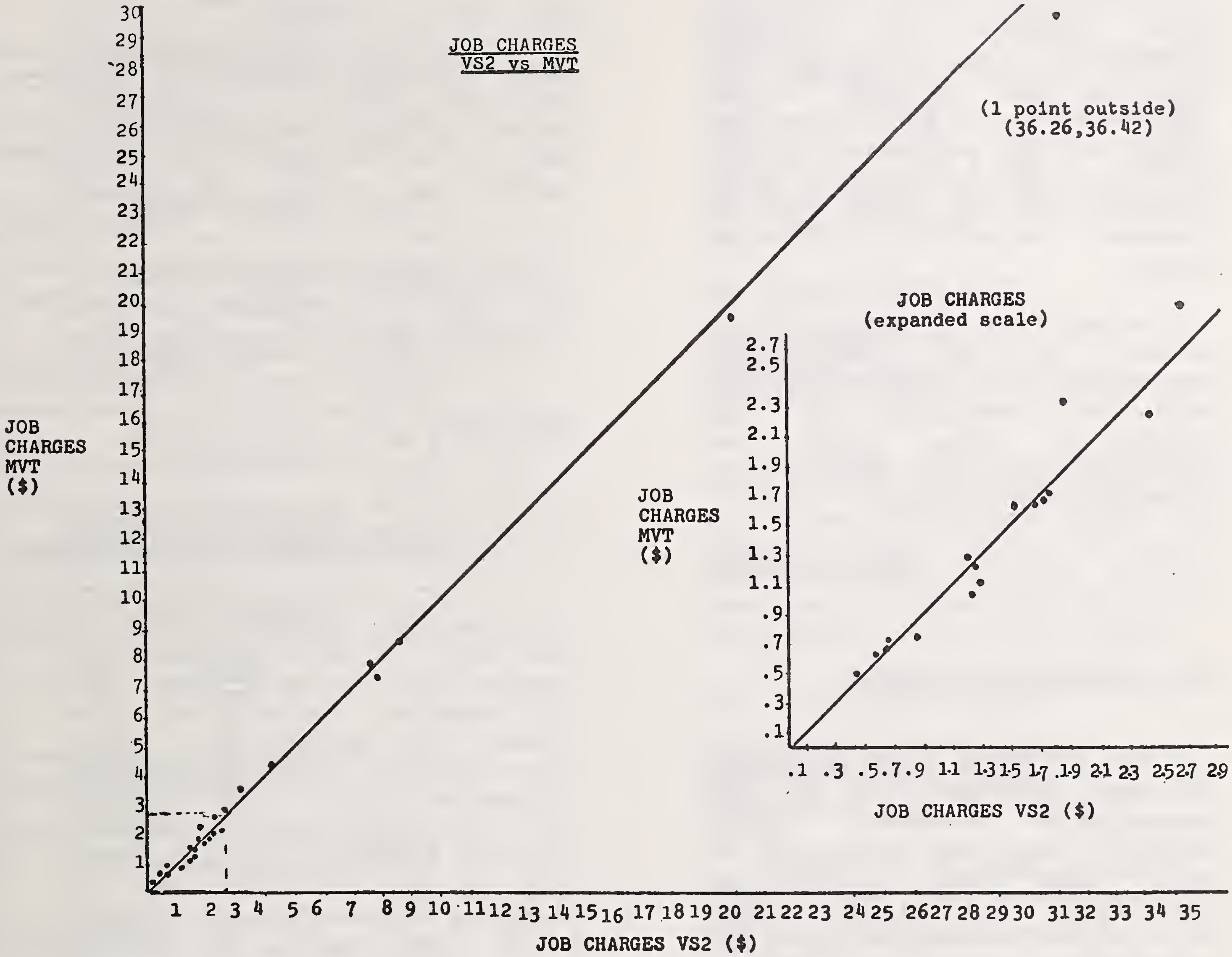
The CPU and Memory charge factors were adjusted so that the total job charges for the stream under VS2 was the same as under MVT. The scatter in the individual job costs can be seen in the graph below. This scatter is comparable to the scatter in job costs experienced from one release of MVT to the next.

Thus, although it is premature to draw firm conclusions, it appears from this preliminary investigation that VS2 job charges need not be significantly different from those under MVT.

Conclusion

As a result of the extensive evaluation of VS2 Release 2, UTCC is convinced that VS2 can be installed on our Model 165 without difficulty. The present jobs run without change under VS2. VS2 is as reliable as MVT. VS2 performs as well or better than MVT. Accounting can be provided in a relatively transparent manner if that is considered desirable.

Dave McNaughton


JOB CHARGES
VS2 vs MVT
(1 point outside)
(36.26,36.42)
JOB CHARGES MVT ($)
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
JOB CHARGES VS2 ($)
JOB CHARGES
(expanded scale)
JOB CHARGES MVT ($)
2.7 2.5 2.3 2.1 1.9 1.7 1.5 1.3 1.1 .9 .7 .5 .3 .1
.1 .3 .5 .7 .9 1.1 1.3 1.5 1.7 1.9 2.1 2.3 2.5 2.7 2.9
JOB CHARGES VS2 ($)

THE VS PRIMER

The staff of S/370 Services have prepared a special publication, the VS PRIMER which describes and explains Virtual Storage and how it will affect jobs submitted for processing on the S/370-165. The VS PRIMER is fairly comprehensive and should be of interest to all S/370 Services users.

Copies of the VS PRIMER will be mailed to all COMPUTERNEWS subscribers and additional copies will be available at the Information Office SF128, the Advising Office SF117 and from the Terminal Co-ordinators.

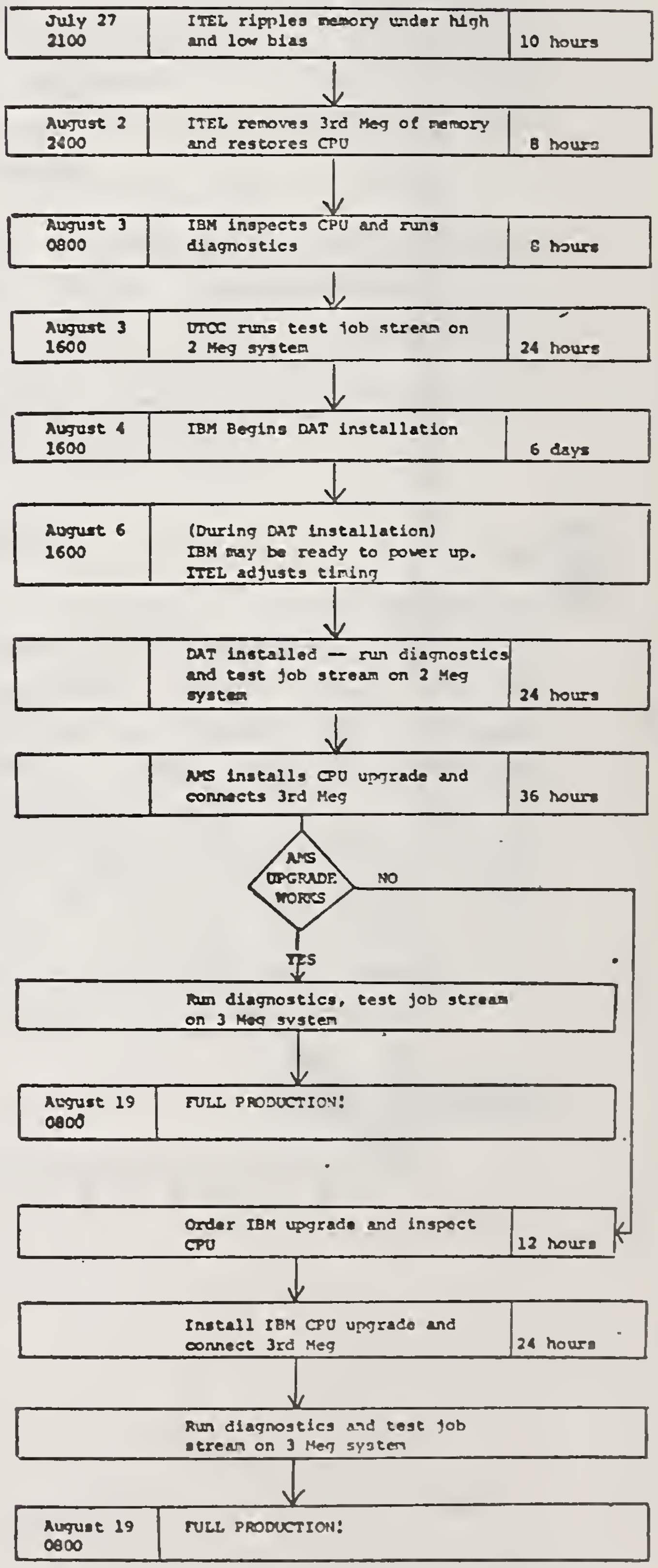
Janet Campbell

DAT INSTALLATION SCHEDULE

The following chart summarizes the main checkpoints in the DAT installation schedule. Users should be aware that there will be some time slots during the installation when Test Job Streams will be run and some user jobs may be submitted. Watch the bulletin boards in the terminal and service areas for current information or call 928-7373.

Eugene Siciunas

DAT INSTALLATION SCHEDULE


July 27
2100
ITEL ripples memory under high and low bias
10 hours
August 2
2400
ITEL removes 3rd Meg of memory and restores CPU
8 hours
August 3
0800
IBM inspects CPU and runs diagnostics
8 hours
August 3
1600
UTCC runs test job stream on 2 Meg system
24 hours
August 4
1600
IBM Begins DAT installation
6 days
August 6
1600
(During DAT installation)
IBM may be ready to power up.
ITEL adjusts timing
DAT installed — run diagnostics and test job stream on 2 Meg system
24 hours
AMS installs CPU upgrade and connects 3rd Meg
36 hours
AMS UPGRADE WORKS
NO
YES
Run diagnostics, test job stream on 3 Meg system
August 19
0800
FULL PRODUCTION!
Order IBM upgrade and inspect CPU
12 hours
Install IBM CPU upgrade and connect 3rd Meg
24 hours
Run diagnostics and test job stream on 3 Meg system
August 19
0800
FULL PRODUCTION!

NEW DISK DRIVES

S/370 Services will be replacing the IBM 3330 disk drives with plug compatible disk drives from ITEL. The twelve ITEL 7330 disk drives and two 7830 control units are identical to the IBM devices in function and storage capacity.

This hardware reconfiguration will be transparent to users and will not necessitate any changes to existing JCL.

Stan Yagi

MAGNETIC TAPE DRIVE UPGRADE

S/370 Services will perform a major upgrade on two of the four IBM 3400 magnetic tape drives, effective Tuesday, September 3, 1974. This upgrade will enable these two drives to read and write magnetic tapes at the new density of 6250 BPI. Currently, all four 3400 magnetic tape drives available on the S/370-165 support dual density and will operate at either 800 BPI or at 1600 BPI. As a result of the upgrade, two devices will continue to offer the 800 BPI/1600 BPI dual density feature while the upgraded drives will operate at either 1600 BPI or 6250 BPI.

In order to facilitate procedures for ensuring that tapes of any given density are mounted on compatible tape drives, the following subset of IBM magnetic tape unit names is defined as the S/370 Services installation standard. Note that the appropriate DCB density (DEN) parameter must be used with the unit names as shown:

For 9 track tapes code:

UNIT=2400,DEN=2 for 800 BPI
UNIT=3400-3,DEN=3 for 1600 BPI
UNIT=3400-5,DEN=4 for 6250 BPI

To avoid possible confusion, S/370 Services will discontinue the use of the generic name TAPE9. In addition, users should be aware that the /*SETUP statement will be redefined to process only the above three names for nine track tapes.

For 7 track tapes code:

UNIT=2400-2,DEN=0 for 200 BPI
UNIT=2400-2,DEN=1 for 556 BPI
UNIT=2400-2,DEN=2 for 800 BPI

Similarly, to avoid confusion, S/370 Services will discontinue the use of the generic name TAPE7.

Aside from the obvious improvement of being able to place more data on a given tape, users can expect a general gain in reliability because of improved error checking and error recovery features in the new 6250 BPI drives.

Users with questions or problems concerning the upgrade are invited to contact Herb Kugel at 928-7286.

Herb Kugel

UTTIME

UTTIME is a subroutine developed by UTCC which supplies the user with information concerning the I/O wait time and CPU time remaining in his job. UTTIME is normally used to time or tune a program and is then removed. The function and structure of UTTIME is highly dependent upon the current S/370-165 software configuration. Therefore, UTTIME will not function successfully on any future S/370-165 software which is not OS/MVT in nature. Users are urged to avoid permanently linkediting this module into their programs.

Questions or problems concerning UTTIME should be directed to Herb Kugel at 928-7286.

Herb Kugel

UNLOADING AND DIAGNOSTIC INFORMATION ON ISAM DATASETS

There has been an increase in the number of ISAM datasets being used by S/370 Services users, particularly by some of our commercial users. One problem encountered by these users is the successful unloading of the dataset; specifically, when attempting to change the format from ISAM to sequential either for shipment to another installation or for analysis. Users are advised that the IBM utility, IEBISAM is extremely inefficient for unloading datasets and demands that the output be in 80 bytes logical record length.

Our users are reminded that UTCC provides a utility, ISAM which is much more flexible and can simplify these procedures. Please contact Herb Kugel at 928-7286 if you have any questions regarding ISAM datasets.

Herb Kugel

REVIEW OF THE GOULD SEMINAR

A Gould printer/plotter seminar was held July 17. A number of software enhancements which correct most outstanding plotting problems were discussed and are reviewed in this article for the benefit of those users who were unable to attend the seminar. Documentation on these and other Gould features will be available soon in USERBOOK, the UTCC reference manual.

Subplots

Plots can logically be divided into subplots. Although each subplot is limited to 15 feet in length, the total plot length can be greater. Users can specify length limits on each subplot. This feature is useful in preventing excessive plotting in the event that a bug or loop exists in a user's program.

Multiple Copies

Multiple copies of the entire plot or any subplot(s) are allowed.

cont'd...

GOULD SEMINAR Cont'd...

Background Forms

A background form may be overlaid on a plot or subplot. The background forms available consist of two grid types or solid black.

Line types

Lines may be drawn in varying thicknesses; dotted lines are also supported. In addition, negative plots i.e. white lines on black background may be plotted and parts of the plot may be deleted.

The above software has been written in a form compatible with the standard Calcomp software. Thus, programs written using standard Calcomp software, standard Gould software or UTCC Calcomp/Gould software should run successfully on the Gould plotter at UTCC. This feature should prove helpful to users running programs originally written for use at other computer installations.

Queuing

One of the major delays users have encountered while using the Gould printer/plotter has been job queuing. As a non-IBM piece of equipment, the Gould printer/plotter is not supported by OS. S/370 Services initially solved this problem by having the user's job write into an online dataset. A system-initiated job would then read the data from the dataset and decode it into the control information required to produce the dots on the plotter paper. Plotting delays resulted as it was not possible for more than one job to access the dataset at a time and remaining jobs were forced to queue.

The planned solution to this problem is to have jobs access the plotter in the same way they access the printers. This allows user jobs and the plotter to run concurrently. Storage limitations delayed the implementation of this software change. Conventional methods would have required the continuous dedication of 150K to run the plotter. S/370 Services has now developed and implemented software which allows the system to dynamically allocate the necessary storage and release it when not in use. Users should see some improvement in queuing as a result of this change.

Bob Radcliffe

ATTENTION PLOTTER COURSE INSTRUCTORS

Instructors planning to make course assignments during the Fall semester which involve the use of the Calcomp or Gould plotters are urged to contact Bob Radcliffe at 928-4924 in order to co-ordinate plotter activity. Prior notification of peak usage periods will provide S/370 Services with an opportunity to anticipate special scheduling requirements and thus avoid many of the bottlenecks that users may have encountered in the past.

Bob Radcliffe

TSO TOPICS

With the departure of John Wettlaufer mentioned elsewhere in this issue of COMPUTERNEWS, the TSO functions provided by S/370 Services staff have been reassigned. Ian Darwin is now responsible for all TSO user information services including documentation, courses, seminars and the evaluation of user requirements and new applications. Users with ideas or suggestions regarding TSO may contact Ian in the Sandford fleming Builing, room 116 or call 928-7318.

The NSCRIPT processor, announced in this column last month, provides the TSO user with a facility for the formatting of text files along the lines of that provided by ATS/360 or CMS SCRIPT. The formatting operation can be performed in the background, although it is extremely difficult to create the input in the background (the input should be created through TSO). In order to format a large document without tying up the terminal for a long period of time, or to run at priority 4, a batch job may be submitted to run the NSCRIPT processor. Full JCL requirements will be contained in USERBOOK Section 3. Examples of special features such as creating a table of contents, programmed looping etc. will also be included in this documentation.

S/370 Services will be evaluating several new subcommands for the EDIT command. Some examples are MOVE (to move lines), COPY (to copy lines), DUP (to duplicate lines), display current line number (a subcommand especially useful with NONUM), display name and membername of edited dataset etc. Users wishing special commands added to the EDIT mode or command mode, should contact Ian Darwin as above.

Ian Darwin

HSJS NEWS -- SP/k COMPILER AVAILABLE

An SP/k compiler is now available on the High Speed Job Stream. SP/k was designed to teach introductory computer programming and is a structured sequence of subsets of the PL/I language. The compiler was developed at the University of Toronto by the Computer Systems Research Group (CSRG). The compiler has already been used in one introductory Computer Science course and occasionally usage surpassed that of PL/C. Documentation on the SP/k compiler is available from CSRG. USERBOOK documentation will be available in mid September. Handouts on the $JOB card format will be available soon from the Information Office and from the Terminal Co-ordinators.

Mark Tapia

HSJS MONTHLY STATISTICS

During the month of June, 1974, 80,756 jobs were processed compared to 41,298 for the previous year, an increase of 95.5%.

The following charts summarize the HSJS activity for the month of June. The graph represents the average number of jobs processed during each half hour period of the day.

Mark Tapia

```
RESOURCE_USAGE_BY_PROCESSOR

                              ||      TOTAL PER PROCESSOR        ||     AVERAGE PER USE       |
                              ||    CPU   |  #CARDS  |  #LINES   ||  CPU   |#CARDS | #LINES   |
PROCESSOR | #USES %TOTAL||   (MIN)  |   READ   |  PRINTED  ||  (MIN) | READ  | PRINTED  |
-------------------------------------------------------------------------------------------
WATFIV    | 42064  (52) ||   602.93 |  8158887 |   8654762 || 0.012 |  192  |   204    |
SP/k      | 22435  (28) ||   428.07 |  1306163 |   2631090 || 0.016 |   56  |   116    |
PL/C      | 10577  (13) ||   174.48 |  1244388 |   2563100 || 0.016 |  116  |   240    |
UTILITY   |  2405  ( 3) ||    10.45 |   552915 |    646946 || 0.004 |  228  |   268    |
WATBOL    |  1015  ( 1) ||    11.20 |   196941 |    208332 || 0.008 |  192  |   204    |
SPITBOL   |   865  ( 1) ||     9.46 |   204450 |    213831 || 0.008 |  236  |   244    |
ALGOLW    |   579  ( 1) ||    13.05 |    89751 |    126536 || 0.020 |  152  |   216    |
ASMG      |   481  ( 1) ||    10.21 |   105089 |    169551 || 0.020 |  216  |   352    |
SIMON     |   178  ( 0) ||     1.01 |     6256 |     13006 || 0.004 |   32  |    72    |
PLUTO     |   128  ( 0) ||     1.40 |     9730 |     14816 || 0.008 |   76  |   112    |
ASSIST    |    16  ( 0) ||     0.08 |     2773 |      2383 || 0.004 |  172  |   148    |
LISP      |    13  ( 0) ||     0.08 |     2741 |      2108 || 0.004 |  208  |   160    |
-------------------------------------------------------------------------------------------
TOTAL .     80756       ||  1262.43 | 11880084 |  15246461 || 0.016 |  147  |   188    |
ALL TERMINALS                                        JOB VOLUME FOR 01/06/74 - 28/06/74
CLASS = W                                                 (AVERAGE OVER 28 DAYS)

                                                        # JOBS WHICH BEGAN EXECUTION AT INDICATED TIME
                                   25   50   75  100  125  150  175  200  225  250  275  300  325  350  375  400  425  450  475  500
                     |#JOBS|TOO|----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                     |   11|   |66
PROCESSOR #USES    % |   12|   |66
WATFIV    42064 (52) |    9|  1|6
SP/k      22435 (27) |    7|   |6
PL/C      10577 (13) |    6|  2|6
UT(L(TY    2405 ( 2) |    5|   |6
WATBOL     1015 ( 1) |    5|  3|6
SP(TBOL     865 ( 1) |    4|   |
ALGOLW      579 ( 0) |    2|  4|
ASMG        481 ( 0) |    1|   |
SIMON       178 ( 0) |    1|  5|
PLUTC       128 ( 0) |    0|   |
ASS(ST       16 ( 0) |    1|  6|
OTHER         0 ( 0) |    0|   |
                     |    0|  7|
                     |    0|   |
                     |   11|  8|66
                     |   25|   |66666
                     |   43|  9|66666666
                     |   56|   |66666666666
                     |   82| 10|6666666666666666
                     |   98|   |6666666666666666666
                     |  110| 11|6666666666666666666666
                     |  112|   |6666666666666666666666
                     |  106| 12|666666666666666666666
                     |  105|   |666666666666666666666
                     |  109| 13|666666666666666666666
                     |  139(   |666666666666666666666666666
                     |  145| 14|66666666666666666666666666666
                     |  149|   |66666666666666666666666666666
                     |  149| 15|66666666666666666666666666666
                     |  149|   |66666666666666666666666666666
                     |  151| 16|666666666666666666666666666666
                     |  136|   |666666666666666666666666666
                     |   94| 17|666666666666666666
                     |   98|   |6666666666666666666
                     |   98| 18|6666666666666666666
                     |   98|   |6666666666666666666
                     |   81| 19|6666666666666666
                     |   83|   |6666666666666666
                     |   84| 20|6666666666666666
                     |   90|   |666666666666666666
                     |   90| 21|666666666666666666
                     |   95|   |6666666666666666666
SHIFT   #JOBS        |    5| 22|6
0 - 8    1598        |    2|   |
8 - 4   44743        |    2| 23|
4 - 12  34015        |    2|   |
                       2884|   | 8-SERV(CE FACTOR(2.0) || 6-SERVICE FACTOR(1.0) || 4-SERVICE FACTOR(0.6)

TOTAL JOBS AT SF 0.6 (UNAVERAGED)     0
TOTAL JOBS AT SF 1.0 (UNAVERAGED) 80756
TOTAL JOBS AT SF 2.0 (UNAVERAGED)     0
TOTAL JOBS AT ALL SF (UNAVERAGED) 80756
```

S/370 RELIABILITY

The reliability statistics produced for June indicated a 96.1 uptime percentage while the average number of IPL's per day was 0.75. The scheduled hours of production for June totalled 404. This decrease in system reliability can be directly attributed to the 400% increase in Hardware downtimes when these figures are compared with May's reliability statistics.

MONTHLY COMPARATIVE FIGURES

MONTH	% UPTIME	UNSCHED IPL'S/DAY
JAN 73	96.8	0.87
FEB 73	98.3	1.18
MAR 73	97.8	1.16
APR 73	97.1	1.39
MAY 73	98.5	1.20
JUN 73	98.5	1.70
JULY 73	99.4	0.37
AUG 73	97.6	1.13
SEPT 73	86.8	3.63
OCT 73	95.6	1.83
NOV 73	98.1	0.93
DEC 73	98.6	0.62
JAN 74	97.0	1.37
FEB 74	98.3	1.25
MAR 74	98.7	1.06
APR 74	99.3	0.52
MAY 74	99.2	0.87
JUN 74	96.1	0.75

The percentage breakdown of total system downtime was: HARDWARE - 908 minutes (82.9%), SOFTWARE - 77 minutes (7.0%), OTHER - 110 minutes (10.1%). The major events contributing to these downtime totals were as follows:

June 2,7 - A total of 60 minutes and 2 IPL's were attributed to a power problem in the 2314 control unit. A faulty circuit breaker caused the 2314 disk drives to power down, necessitating Operator intervention to reset the circuit breaker before power could be restored.

June 5 - A total of 24 minutes of downtime and 3 IPL's were attributed to a problem in the HASP software. The problem was isolated to an invalid HASP command generated from a Remote site causing a HASP catastrophic error to occur. Assurance is currently investigating a fix.

June 7,20,21 - A total of 824 minutes of downtime and 7 IPL's were attributed to two separate problems with the ITEL memory unit. The first problem was caused by a defective power supply in the ITEL storage control unit. The second problem was attributed to dead driver cards which were being destroyed by a faulty storage card in the ITEL unit. This problem has been rectified.

Dave Rauch

```
                        DOWNTIME_REPORT_ON__S/370__FOR_JUN_74


------------------------------------------------------------------------------------------------------------------------------
|                                                        REIPLS(FREQ) // DOWNTIME (MN)                                       |
|  DAY  REIPL  DNTIME 0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95  100|
=====================+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
| S  1     0       0 |                                                                                                    |
| S  2     0      50 |**************************************************                                                  |
| M  3     0       0 |                                                                                                    |
| T  4     0       0 |                                                                                                    |
| W  5     3      24 |□□□*********************                                                                            |
| T  6     1      10 |□*********                                                                                          |
| F  7     2     335 |□□************************************************************************************************** 335 |
| S  8     0       0 |                                                                                                    |
| S  9     0       0 |                                                                                                    |
| M 10     0       0 |                                                                                                    |
| T 11     0      35 |***********************************                                                                 |
| W 12     0      10 |**********                                                                                          |
| T 13     0       0 |                                                                                                    |
| F 14     2      15 |□□*************                                                                                     |
| S 15     0      10 |**********                                                                                          |
| S 16    ·0       0 |                                                                                                    |
| M 17     1      10 |□*********                                                                                          |
| T 18     0       0 |                                                                                                    |
| W 19     0      10 |**********                                                                                          |
| T 20     6     432 |□□□□□□********************************************************************************************** 432 |
| F 21     2     112 |□□************************************************************************************************** 112 |
| S 22     0       0 |                                                                                                    |
| S 23     0       0 |                                                                                                    |
| M 24     2      15 |□□*************                                                                                     |
| T 25     1       9 |□********                                                                                           |
| W 26     0       0 |                                                                                                    |
| T 27     0       0 |                                                                                                    |
| F 28     1      18 |□*****************                                                                                  |
| S 29 (CENTER CLOSED) |                                                                                                  |
| S 30 (CENTER CLOSED) |                                                                                                  |
------------------------------------------------------------------------------------------------------------------------------


LEGEND      : ONE □  =ONE REIPL
              ONE *  =ONE MINUTE OF DOWNTIME
```

```
                    _S/370__DOWNTIMES_DURING_JUN_74


---------------------------------------------------------------------------------------------------------------------------
|                                                         TIME OF DAY (HOURS)                                             |
| DAY.  RELOADS DNTIME   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24|
=========================+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| S  1       0      0    |                                                                                                |
| S  2       0     50    |                                    HHHH                                                        |
| M  3       0      0    |                                                                                                |
| T  4       0      0    |                                                                                                |
| W  5       3     24    |                                                                 SSS                            |
| T  6       1     10    |                                                                S                               |
| F  7       2    335    |                                HHHHHHHHHHHHHHHHHHHHHH    H                                     |
| S  8       0      0    |                                                                                                |
| S  9       0      0    |                                                                                                |
| M 10       0      0    |                                                                                                |
| T 11       0     35    |HHH                                                                                             |
| W 12       0     10    |H                                                                                               |
| T 13       0      0    |                                                                                                |
| F 14       2     15    |                                                  S S                                           |
| S 15       0     10    |                                    I                                                           |
| S 16       0      0    |                                                                                                |
| M 17       1     10    |                                              H                                                 |
| T 18       0      0    |                                                                                                |
| W 19       0     10    |                                I                                                               |
| T 20       6    432    |II             HHHHHHHHH        III HHH   HHHHHHHHHHH         S  H                   S          |
| F 21       2    112    |HHHHHHI  H                                     H                                                |
| S 22       0      0    |                                                                                                |
| S 23       0      0    |                                                                                                |
| M 24       2     15    |                                        HS                                                      |
| T 25       1      9    |                                                     H                                          |
| W 26       0      0    |                                                                                                |
| T 27       0      0    |                                                                                                |
| F 28       1     18    |                                I      S                                                        |
| S 29  (CENTER CLOSED)  |                                                                                                |
| S 30  (CENTER CLOSED)  |                                                                                                |
---------------------------------------------------------------------------------------------------------------------------
LEGEND :     H FOR HARDWARE
             S FOR SOFTWARE                STATISTICS
             O FOR OPERATIONAL
             U FOR UNEXPLAINED
             I FOR LATE IPL

                                  TOTAL SCHEDULED HOURS OF PRODUCTION :  464
                                  TOTAL DOWNTIME (MN)  : 1095 , AVG/DAY :  39.11 , AVG/PROD HOUR :   1.10
                                  TOTAL REIPL'S        :   21 , AVG/DAY :   0.75
                                  DOWNTIME RATE IS     :  3.94 PERCENT OF SCHEDULED PRODUCTION HOURS
```

INTERACTIVE SYSTEMS RELIABILITY

The uptimes achieved for the month of June for each of APL, ATS, and CPS were 99.43%, 99.36% and 99.37% of scheduled operation, respectively. The total number of scheduled hours of operation during the month of June was 470, while the number of unscheduled IPL's per day was 0.20. In addition to the scheduled time, APL, ATS and CPS were also available for approximately 144 hours of unattended weekend operation.

The percentage breakdown of total system downtime was: Hardware - 43 mins. (23.63%), Software - 139 mins. (76.37%). The following table summarizes the time lost from scheduled hours of production due to system failures for each of the systems. Six unscheduled IPL's were required as a result of the failures.

DATE	DOWNTIME (mins)			REASON
	APL	ATS	CPS	
Tue. June 4	35	34	33	*Solid System (SOFTWARE)
Thu. June 6	11	14	15	*HASP Error in Rel 21.7 (SOFTWARE)
"	12	15	16	*HASP Error in Rel 21.7 (SOFTWARE)
Wed. June 12	40	43	44	*Machine Check (HARDWARE)
"	25	28	29	*File Subsystem EC (SOFTWARE)
Sun. June 16	35	38	39	*APL Control Terminal Locked (SOFTWARE)
Tue. June 18	-	8	-	ATS Abend 0F1 (SOFTWARE)
Total	158	180	176	*IPL Required

System Failures June 1 to June 30, 1974

Kam Jain

APL SORTS

Many users have encountered difficulties when attempting to perform an APL sort on very large files. UTCC has a program available which may be used to sort both small and large files and is particularly efficient in sorting very large files. Users interested in using this program are invited to contact Jerry Novak in Room 305, 49 St. George Street, phone 928-6387 for copies of the documentation.

Jerry Novak

BATCH PDP-11 ASSEMBLIES

Users may now submit their PDP-11 assemblies (and FORTRAN compilations when FORTRAN arrives) for processing by the CRF staff. Turnaround on this type of job submission will depend upon machine availability. However, two hours will be conditionally reserved (12:00 noon and 4:00 p.m.) and jobs submitted prior to these times will be processed during the reserved hours. If no jobs are submitted by the beginning of these reserved time slots, the time will be made available for normal use.

To use this service, the user should fill out a Batch Job Request Form, available by the input trays inside the CRF Laboratory.

Dennis Smith

PAPER TAPE MEDIA CONVERSION

CRF now offers a user operated or batch submission Paper Tape conversion service. This service allows the following conversions:

- Paper Tape to 9 trk. magnetic tape
- Cards to Paper Tape
- Magnetic Tape to Paper Tape
- Paper Tape to Cards (by special request)

Currently, the following formats are supported for both input and output:

ASCII: both card image and carriage return/line feed format

EBCDIC: both card image and carriage return/line feed format

Free format: for non-source data, including the interchange of bytes for compatibility between PDP-11 word format and 360/370 half word format

Users with other conversion situations should contact a CRF staff member. Documentation on the use of this system is available from the CRF Laboratory Co-ordinator.

Dennis Smith

HIGH SPEED ANALOG TO DIGITAL

CRF now has a high speed Analog to Digital system for use in CRF's Laboratory only. This system allows data rates of up to 35,000 conversions per second. Data is gathered on 800/1600 BPI magnetic tape and may be processed either on the GT44 graphics system at CRF, or on the S/370-165.

The system has the following facilities:

- 1-8 channels of analog input (up to 4 of which may be set to fixed voltage inputs)
- Internally clocked data rates from 1 sample per second to 35,000 per second.

cont'd...

ANALOG TO DIGITAL Cont'd...

- Externally triggered sampling.
- Externally controlled starting and stopping of internally clocked data sampling.

Future additions to the system will include:

- 2 channels of digital to analog conversion (outputs may be connected to a strip chart recorder).
- 1 channel of digital (binary) output.
- 1 channel of digital (binary) input.

For further information please contact the CRF Laboratory Coordinator.

Dennis Smith

NEW FROM DATATALK

In last month's issue of COMPUTERNEWS, the University of Toronto Computer Centre introduced a new service, DATATALK. DATATALK offers over-the-telephone computation and computing services to the University of Toronto community as a convenience service of UTCC. DATATALK charges are nominal and may be shared among several users. More details will be available soon in the DATATALK brochure and in the UTCC USERBOOK, Section 7. Interested users are invited to contact us at 928-6710.

Effective this month, DATATALK provides a message service for DATATALK subscribers. You may send messages to, or receive messages from other DATATALK subscribers during any DATATALK SIGN-ON. APL notifies the DATATALK operator that there is a message for the subscriber. The operator retrieves the message and relays it to you. If you leave a message for another DATATALK subscriber, he will receive the message in the same manner i.e. he must initiate a SIGN-ON by calling 928-6710.

Incidentally, the DATATALK SIGN-ON is now faster than ever, averaging about 6 seconds after the call has been connected. This improved service is achieved by outputting the subscriber's mailing address at the end of the session rather than during the SIGN-ON.

Ernst Goetze

ERRATUM

Some of our readers were probably puzzled by the unusual problem statement which appeared in the article titled INTRODUCING DATATALK in last month's COMPUTERNEWS. The Editor apologizes to the DATATALK group and to our readers for any confusion caused by this misprint. The correct problem statement is:

$$\text{Plot } F(x) = \int_0^x (1 - x^3)^{-2/3}\, dx$$

and $G(x) = \arcsin(x)$

on the same coordinate axes, step size 0.02, $0 \leq x < 1$

Janet Campbell

UTCC DIRECTORY

	ROOM	PHONE 928-
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7094 SERVICES		
MANAGER		
Joyce Walton	BT1207	7094
COMPUTER RESEARCH FACILITY		
MANAGER		
Dennis Smith	SF214B	4086

JOB STATUS QUERIES:

SYSTEM/370	7373
7094	7094

INTERACTIVE TERMINAL SYSTEMS:

System Status	6234
APL	7200
ATS	7100
CPS	6200

TSO:

2741 Terminal Malfunctions	7107
2741	7303
TTY	7390

UTCC COMPUTER EQUIPMENT

SYSTEM/370 MODEL 165

- located in SF103/105/112
- provides General Purpose Job Stream, High Speed Job Stream and TSO services
- 3072K bytes of memory
- 1 drum
- 12 disk drives IBM (3330)
- 8 disk drives IBM (2314)
- 6 magnetic tape drives (4 9-track and 2 7-track)
- 6 display consoles
- 6 printers
- 5 card readers
- 1 card punch
- 7 remote batch terminals
- 1 paper tape reader
- Calcomp plotters (11" and 30")
- Gould plotter (11")
- OS/MVT with HASP

SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides Interactive Systems Service
- 1536K bytes of core
- 16 disk drives (2314)
- 2 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 140 typewriter terminals
- OS/MVT with APL, ATS, and CPS

7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

COMPUTER RESEARCH FACILITY

- located in SF207
- DEC GT44 System with
  - 1 PDP-11/40 CPU
  - 2 9-track dual density tape drives
  - 1 1000 cpm card reader
  - VT17 graphics display unit
  - 1 lab. peripheral system with A/D & D/A
- DEC GT40 System with
  - 1 PDP-11/10 CPU
  - 1 2314 type disk drive
  - 1 VT12 graphic display unit
  - 9-track/800 BPI tape drive
  - 1 Calcomp microfim plotter
- 2 digitizing tablets
- 1 2701 data adapter with RADDTS

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